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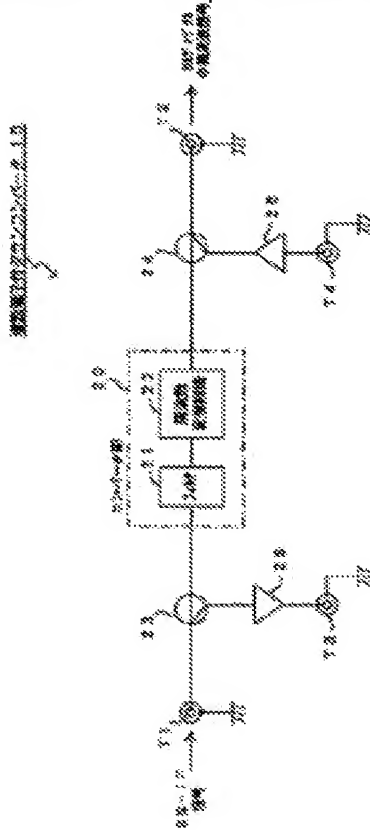
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**Abstract:**

**PROBLEM TO BE SOLVED:** To easily and inexpensively realize system change when a BS digital broadcasting channel is newly increased by validly using the already existing facility in a CATV system for transmitting a BS-IF signal to a terminal side by a pass-through system. **SOLUTION:** In this down-converter 10 with an extended terminal, signals corresponding to BS-5-11ch among BS-IF signals to be inputted to an input terminal T1 are converted into a prescribed frequency band by a converter part 20, and transmitted to a transmission line. A part of the inputted BS-IF signals are outputted through a branching device 23 and a branch output terminal T3 to the outside. Thus, signals corresponding to the other BS-1, 3, 13, and 15ch can be frequency-converted by an already existing down-converter, and the converted signals are fetched through a mixing input terminal T4 to a mixing device 24, and outputted with the signals from the converter 20. Therefore, it is possible to efficiently facilitate countermeasures to the digitization of the present analog BS broadcasting which is presumed in the future.

**JPO Machine translation abstract:****(57) Abstract**

**SUBJECT** In the CATV system which transmits BS-IF signal to the terminal side with a passthrough method, a system change when the channels of BS digital broadcasting newly increase in number is realized by simple low cost, using the existing equipment effectively.

**Means for Solution** Although it is because the down converter 10 with an extension terminal changes a signal corresponding to BS-5 - 11ch into a predetermined frequency band by the converter part 20 among BS-IF signals inputted into the input terminal T1 and it sends out to up to the transmission line, A part of inputted BS-IF signal is outputted outside via the point and crossing 23 and branching output terminal T3. Therefore, other BS-1, 3 and 13, and 15ch can carry out frequency conversion with the existing down converter, and a signal after conversion is outputted with a signal from the converter part 20 by incorporating into the mixer 24 via the mixed input terminal T4. Therefore, it can respond to digitization of the present analog BS broadcasting expected in the future efficiently.

**Claim(s)**

**Claim 1** Receive a BS-digital-broadcasting electric wave transmitted from a broadcasting satellite, and. A head end is equipped with BS antenna which carries out frequency conversion

of this reception radio wave to BS digital input signal of a predetermined frequency belt higher than broadcasting frequency of a VHF band and a UHF band to which it was assigned by terrestrial television broadcasting lower than the original frequency, and outputs it to it, BS digital input signal from this BS antenna.

In a CATV system which transmits other television broadcasting signals even to two or more member side terminals via the common transmission line, A BS digital input-signal extraction means for it to be provided in said head end side, and to extract 1 or BS digital input signal for two or more channels out of BS digital input signal from said BS antenna.

BS digital input signal extracted by this BS digital input-signal extraction means in a frequency domain from a VHF band to which it is assigned by terrestrial television broadcasting to a UHF band. And the 1st frequency conversion means that carries out frequency conversion to the 1st BS digital intermediate frequency signal of a predetermined frequency belt which does not overlap with said television broadcasting signal, and is sent out to it on said transmission line so that a frequency band of each channel may not lap.

In a frequency domain from a VHF band which is the down converter provided with the above and is assigned to terrestrial television broadcasting to a UHF band. And frequency conversion is carried out to a predetermined frequency belt which overlaps with neither said television broadcasting signal nor said 1st BS digital intermediate frequency signal.

**Claim 2**An output level of said 1st BS digital intermediate frequency signal which is the down converter according to claim 1, and is sent out on said transmission line from the down converter concerned, and said 2nd BS digital intermediate frequency signal, A down converter provided with the 1st signal level compensation means for filling a regulation level required for all to transmit even said member side terminal via said transmission line.

**Claim 3**what it is **a thing** characterized by comprising the following -- the down converter according to claim 2 by which it is characterized.

The 1st input-side level-adjusting means for making it said 1st signal level compensation means serve as an input level of BS digital input signal before an output level of BS digital input signal outputted to the exterior is separated from said 1st separating mechanism in said 1st separating mechanism, and the approximately said level.

The 1st output side level-adjusting means for making it an input level of said 2nd BS digital intermediate frequency signal inputted into said 1st mixing means and an output level at the time of this 2nd BS digital intermediate frequency signal being sent out on said transmission line via said 1st mixing means turn into the approximately said level.

**Claim 4**The down converter comprising according to any one of claims 1 to 3:

Said 1st BS digital intermediate frequency signal sent out on said transmission line via said 1st mixing means, and said 2nd BS digital intermediate frequency signal.

A TV signal mixing means which mixes said television broadcasting signal and is sent out to up to said transmission line.

**Claim 5**A channel of BS digital input signal extracted by said BS digital input-signal extraction means among BS digital input signals from said BS antenna, The down converter according to any one of claims 1 to 4 being either of the channels except BS-1, four channels of 3, 13, and 15, or this 4 \*\* channel.

**Claim 6**Receive a BS-digital-broadcasting electric wave transmitted from a broadcasting satellite, and. A head end is equipped with BS antenna which carries out frequency conversion of this reception radio wave to BS digital input signal of a predetermined frequency belt higher than broadcasting frequency of a VHF band and a UHF band to which it was assigned by terrestrial television broadcasting lower than the original frequency, and outputs it to it, BS digital input signal from this BS antenna.

Transmit even two or more member side terminals via the common transmission line, and other television broadcasting signals. In a CATV system with which the down converter according to any one of claims 1 to 5 was provided in said head end side, A BS digital intermediate frequency signal extraction means for it to be provided on the transmission line by the side of said member, and to extract either one of said 1st BS digital intermediate frequency signal or said 2nd BS digital intermediate frequency signal out of a transmission signal from said head end.

The 2nd frequency conversion means that carries out frequency conversion of said 1st or 2nd BS digital intermediate frequency signal extracted by this BS digital intermediate frequency

signal extraction means to BS digital input signal of a frequency band of origin outputted from said BS antenna, and sends it out to said member side terminal.

It is the up converter provided with the above, and frequency conversion is carried out to BS digital input signal of a frequency band of origin outputted from said BS antenna.

**Claim 7.** Are the up converter according to claim 6, and are sent out from the up converter concerned to said member side terminal. An output level of BS digital input signal from said 2nd frequency conversion means and said external BS digital input signal, An up converter provided with the 2nd signal level compensation means for all to fill a regulation level required to receive at said member side terminal.

**Claim 8**The up converter comprising according to claim 7:

The 2nd input-side level-adjusting means for making it said 2nd signal level compensation means serve as an input level of said transmission signal before an output level of said transmission signal outputted to the exterior is separated from said 2nd separating mechanism in said 2nd separating mechanism, and the approximately said level.

The 2nd output side level-adjusting means for making it an input level of said external BS digital input signal inputted into said 2nd mixing means and an output level at the time of this external BS digital input signal being sent out via said 2nd mixing means to said member side terminal turn into the approximately said level.

**Claim 9**The up converter according to any one of claims 6 to 8, wherein said up converter builds in signal transmission equipment which transmits said transmission signal to the terminal side and is installed on the transmission line by the side of said member.

**Claim 10**A CATV system comprising:

Receive a BS-digital-broadcasting electric wave transmitted from a broadcasting satellite, and. A head end is equipped with BS antenna which carries out frequency conversion of this reception radio wave to BS digital input signal of a predetermined frequency belt higher than broadcasting frequency of a VHF band and a UHF band to which it was assigned by terrestrial television broadcasting lower than the original frequency, and outputs it to it, BS digital input signal from this BS antenna.

It is a CATV system which transmits other television broadcasting signals even to two or more member side terminals via the common transmission line, said head end side is equipped with the down converter according to any one of claims 1 to 5, and it is the up converter according to any one of claims 6 to 9 on the transmission line by the side of said member.

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